

Galliard Computing - Early Years

Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Computer Science
Composite knowledge	Know that we can use the internet/WWW to find out information Know that a computer is a machine	Using 'paint' program to create pictures. Be able to use computers, ipads, ipods, and IWB to perform simple tasks/functions Understand and begin to use google earth, google maps Know that we can use the internet/WWW to find info	Creating/following maps Sequencing stories Creating patterns Sequencing pictures/stories Program a beebot to follow a 4 step route Use directional language Think logically to solve problems in a range of contexts
Component Knowledge Two's	Remote learning – video songs/rhymes/stories	Share photos, tapestry observations 'tech' in home corner (role play) – phones, computers, cameras	Model directional language in a range of contexts
Component Knowledge Nursery	Use the internet to find more information – google - (e.g. about animals, countries) Youtube – explore things we can't directly experience –animals in the wild etc.	Explore drawing programmes on IWB Tapestry – share observations and learning from home and school – with adults, other children – use to reflect on learning and develop language (talking about obs) Use ipods, ipads, cameras – range of functions 'tech' in home corner (role play) – phones, computers, cameras Stories at home via tapestry- Nursery staff to read and record stories for Tapestry	Beebots – explore, use buttons to make them move Exploring patterns – range of contexts – maths, natural etc.
Component Knowledge Reception	Homework via tapestry – teacher videos and upload responses 'Tinkering time' dismantle computers, keyboards etc. Explore what's inside Remote learning – online storytime with teacher (microsoft teams). Virtual literacy lessons. Online phonics lessons (also digital literacy)	Use the internet to find more information (e.g. about animals, countries) – link with science, geography Youtube - explore things we can't directly experience – animals in the wild etc Use 'paint' and other programmes on IWB to create pictures (art link) Tapestry – share observations and learning from home and school – with adults, other children and whole class – use to reflect on learning	Beebots – program to follow a route, reach a destination Making and following maps (Bear Hunt) Sequencing stories Problem solving – range of contexts – break down into small steps. Predicting what will happen in different contexts – construction, water, science etc.

		Take own photos and share Use class computers, IWB, ipads – range of functions 'tech' in home corner (role play) – phones, computers, cameras	Exploring and create patterns – range of contexts – maths, natural etc.
Vocabulary	Internet, google, network		Directional language – forwards, backwards, left, right, turn, sequence, predict, instruction Computer, program

Galliard Computing - Year 1

	Term 1		Term 2		Term 3	
Unit of work	Technology all around & Online Safety	Digital Painting	Digital Writing	Grouping Data	Moving a Robot	Programming Animations
Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Digital Literacy	Digital Literacy	Computer Science	Computer Science
Composite knowledge	To identify technology To identify a computer and its main parts To use a mouse in different ways To use a keyboard to type on a computer	To describe what different freehand tools do To use the shape tool and the line tools To make careful choices when painting a digital picture	To use a computer to write To add and remove text on a computer To identify that the look of text can be changed on a computer To make careful choices when changing text	To label objects To identify that objects can be counted To describe objects in different ways To count objects with the same properties	To explain what a given command will do To act out a given word To combine 'forwards' and 'backwards' commands to make a sequence	To choose a command for a given purpose To show that a series of commands can be joined together To identify the effect of changing a value

	<p>To use the keyboard to edit text</p> <p>To create rules for using technology responsibly</p>	<p>To explain why I chose the tools I used</p> <p>To use a computer on my own to paint a picture</p> <p>To compare painting a picture on a computer and on paper</p>	<p>To explain why I used the tools that I chose</p> <p>To compare typing on a computer to writing on paper</p>	<p>To compare groups of objects</p> <p>To answer questions about groups of objects</p>	<p>To combine four direction commands to make sequences</p> <p>To plan a simple program</p> <p>To find more than one solution to a problem</p>	<p>To explain that each sprite has its own instructions</p> <p>To design the parts of a project</p> <p>To use my algorithm to create a program</p>
Component knowledge	<p>Learners develop their understanding of technology and how it can help them in their everyday lives.</p> <p>Learners start to become familiar with the different components of a computer by developing their keyboard and mouse skills.</p> <p>Learners also consider how to use technology responsibly.</p>	<p>Learners develop their understanding of a range of tools used for digital painting.</p> <p>They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work.</p> <p>Learners consider their preferences when painting with and without the use of digital devices.</p>	<p>Learners develop their understanding of the various aspects of using a computer to create and manipulate text.</p> <p>They become more familiar with using a keyboard and mouse to enter and remove text. Learners consider how to change the look of their text, and will be able to justify their reasoning in making these changes.</p> <p>Learners consider the differences between using a computer to create text, and writing text on paper. They will be able to explain which method they prefer and explain their reasoning for choosing this.</p>	<p>Learners are introduced to data and information. Labelling, grouping, and searching are important aspects of data and information.</p> <p>Learners understand that to search data, it must have labels.</p> <p>Learners are introduced to assigning data (images) with different labels in order to demonstrate how computers are able to group and present data.</p>	<p>Learners explore using individual commands, both with other learners and as part of a computer program.</p> <p>Learners identify what each floor robot command does and use that knowledge to start predicting the outcome of programs.</p> <p>Learners learn the early stages of program design through the introduction of algorithms.</p>	<p>Learners begin to create skills in on-screen programming.</p> <p>Learners use programming blocks to use, modify, and create programs.</p> <p>Learners learn the early stages of program design through the introduction of algorithms.</p>
National Curriculum KS1	Key stage 1 Pupils should be taught to:					

(skills)	<ul style="list-style-type: none"> • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. 					
Vocabulary	Keyboard, mouse, laptop, tower, trackpad, screen/monitor, keys.	Tools, mouse, trackpad, shapes, digital painting	Tools, undo, select all, highlight, text, backspace, font, drag, bold, italic, underline, return, spacebar, keys	Group, data, labels, images.	Beebot, buttons, command, sequence, algorithm, program, prediction	Programming, sprite, background, algorithms, design, instructions, blocks, commands
Links to prior knowledge	This unit progresses students' knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse.	This unit progresses on from the knowledge and skills children have learnt from Unit 1, such as keyboard and mouse skills.	<p>This unit progresses the learners' knowledge and understanding of using computers/technology to create and manipulate digital content, focussing on using a word processor.</p> <p>The learners develop their ability to find and use the keys on a keyboard in order to create digital content.</p> <p>The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes.</p>	Children may have learnt about grouping in Maths.	<p>This unit progresses learners' knowledge and understanding of giving and following instructions. It moves from giving instructions to each other to giving instructions to a robot by programming it</p> <p>Progresses on from Early years of using directional language, From sequencing pictures/stories.</p>	This unit progresses learners' knowledge and understanding of programming and follows on from 'Unit 5 – Moving a robot', where children will have learnt to program a floor robot using instructions.
Cross Curricular Links		Art	English	Maths		

Galliard Computing - Year 2

	Term 1		Term 2		Term 3	
Unit of work	Information Technology all around us/Online Safety	Digital Photography	Making Music/Online Safety	Pictograms/Online Safety	Robot Algorithms	Programming Quizzes
Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Digital Literacy	Digital Literacy	Computer Science	Computer Science
Composite knowledge	<p>To recognise the uses and features of information technology</p> <p>To identify the uses of information technology in the school</p> <p>To identify information technology beyond school</p> <p>To explain how information technology helps us</p> <p>To explain how to use information technology safely</p> <p>To recognise that choices are made when using information technology</p>	<p>To use a digital device to take a photograph</p> <p>To make choices when taking a photograph</p> <p>To describe what makes a good photograph</p> <p>To decide how photographs can be improved</p> <p>To use tools to change an image</p> <p>To recognise that photos can be changed</p>	<p>To say how music can make us feel</p> <p>To identify that there are patterns in music</p> <p>To experiment with sound using a computer</p> <p>To use a computer to create a musical pattern</p> <p>To create music for a purpose</p> <p>To review and refine our computer work</p>	<p>To recognise that we can count and compare objects using tally charts</p> <p>To recognise that objects can be represented as pictures</p> <p>To create a pictogram</p> <p>To select objects by attribute and make comparisons</p> <p>To recognise that people can be described by attributes</p> <p>To explain that we can present information using a computer</p>	<p>To describe a series of instructions as a sequence</p> <p>To explain what happens when we change the order of instructions</p> <p>To use logical reasoning to predict the outcome of a program</p> <p>To explain that programming projects can have code and artwork</p> <p>To design an algorithm</p> <p>To create and debug a program that I have written</p>	<p>To explain that a sequence of commands has a start</p> <p>To explain that a sequence of commands has an outcome</p> <p>To create a program using a given design</p> <p>To change a given design</p> <p>To create a program using my own design</p> <p>To decide how my project can be improved</p>
Component knowledge	Learners develop their understanding of what information technology (IT) is and will begin to identify examples.	Learners learn to recognise that different devices can be used to capture photographs. Learners gain experience capturing,	Learners learn to create music on a computer. They listen to a variety of pieces of music and consider how music can	Learners begin to understand what the term data means and how data can be collected in the form of a tally chart.	Learners develop an understanding of instructions in sequences and the use of logical reasoning to predict outcomes.	Learners begin to understand that sequences of commands have an outcome.

	<p>Learners discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries.</p> <p>Learners investigate how IT improves our world.</p> <p>Learners learn about the importance of using IT responsibly.</p>	<p>editing, and improving photos.</p> <p>Learners use this knowledge to recognise that images they see may not be real.</p>	<p>make them think and feel.</p> <p>Learners compare creating music digitally and non-digitally.</p> <p>Learners look at patterns and purposefully create music.</p> <p>Learners will understand that work I create belongs to me.</p>	<p>Learners learn the term 'attribute' and use this to help them organise data.</p> <p>Learners consider whether it is always OK to share data and when it is not OK.</p> <p>Learners know that it is alright to say no if someone asks for their data.</p> <p>Learners know how to report their concerns.</p>	<p>Learners use given commands in different orders to investigate how the order affects the outcome.</p> <p>Learners learn about design in programming.</p> <p>Learners develop artwork and test it for use in a program.</p> <p>Learners design algorithms and then test those algorithms as programs and debug them.</p>	<p>Learners make predictions based on their learning.</p> <p>Learners use and modify designs to create their own quiz questions.</p> <p>Learners realise these designs in ScratchJr using blocks of code.</p> <p>Learners evaluate their work and make improvements to their programming projects.</p>
<p>National Curriculum KS1 (skills)</p>	<p>Key stage 1 Pupils should be taught to:</p> <ul style="list-style-type: none"> • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. 					
<p>Vocabulary</p>	<p>Information technology, devices, rules,</p>	<p>Photo, capture, light source, portrait, landscape, recapture</p>	<p>Music, rhythm, notes, melody, sequence, represent, pitch, musical patterns, compare</p>	<p>Represent, attributes, tally, compare, pictogram,</p>	<p>Beebot, algorithm, debug, test, design, program, sequence, predict, code, logical reasoning.</p>	<p>Modify, quiz, program, evaluate, modify, code, sequence, design, commands</p>
<p>Links to prior knowledge</p>	<p>This unit progresses learners' understanding of technology from Year 1 and how they interact with it.</p>	<p>This unit builds on learners' knowledge that some digital devices can capture images using a camera.</p>	<p>Learners will build on their knowledge of making choices on a tablet/computer.</p> <p>Learners will build on their experience of</p>	<p>This unit progresses students' knowledge and understanding of grouping data.</p> <p>It builds on the Year 1 Data and Information</p>	<p>Learners should have had some experience of creating short programs using floor robots and predicting the outcome of a simple program from Year 1.</p>	<p>This unit builds on the skills attained whilst learning from the Year 1 ScratchJr programming unit.</p>

	<p>They will develop this understanding to become familiar with the term information technology and will be able to identify common features of IT.</p> <p>This unit also builds on the learners' understanding of using technology safely and responsibly.</p>		<p>being able to navigate within an application.</p> <p>Learners will build on their experience of patterns.</p>	<p>unit where learners labelled objects and grouped them based on different properties</p>	<p>This unit progresses learners' knowledge and understanding of algorithms and how they are implemented as programs on digital devices.</p> <p>Learners will spend time looking at how the order of commands affects outcomes.</p> <p>Learners will use this knowledge and logical reasoning to trace programs and predict outcomes.</p>	<p>It progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.</p>
Cross Curricular Links	PSHE	Art and Design	Music Maths	Maths		

Galliard Computing - Year 3

	Term 1		Term 2		Term 3	
Unit of work	Connecting Computers	Animation	Desktop Publishing	Branching Databases	Sequencing Music	Events & Actions in Program
Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Digital Literacy	Digital Literacy	Computer Science	Computer Science
Composite knowledge	<p>To explain how digital devices function</p> <p>To identify input and output devices</p>	<p>To explain that animation is a sequence of drawings or photographs</p> <p>To relate animated movement with a sequence of images</p>	<p>To recognise how text and images convey information</p> <p>To recognise that text and layout can be edited</p>	<p>To create questions with yes/no answers</p> <p>To identify the attributes needed to collect data about an object</p>	<p>To explore a new programming environment</p> <p>To identify that commands have an outcome</p>	<p>To explain how a sprite moves in an existing project</p> <p>To create a program to move a sprite in four directions</p>

	<p>To recognise how digital devices can change the way that we work</p> <p>To explain how a computer network can be used to share information</p> <p>To explore how digital devices can be connected</p> <p>To recognise the physical components of a network</p>	<p>To plan an animation</p> <p>To identify the need to work consistently and carefully</p> <p>To review and improve an animation</p> <p>To evaluate the impact of adding other media to an animation</p>	<p>To choose appropriate page settings</p> <p>To add content to a desktop publishing publication</p> <p>To consider how different layouts can suit different purposes</p> <p>To consider the benefits of desktop publishing</p>	<p>To create a branching database</p> <p>To explain why it is helpful for a database to be well structured</p> <p>To plan the structure of a branching database</p> <p>To independently create an identification tool</p>	<p>To explain that a program has a start</p> <p>To recognise that a sequence of commands can have an order</p> <p>To change the appearance of my project</p> <p>To create a project from a task description</p>	<p>To adapt a program to a new context</p> <p>To develop my program by adding features</p> <p>To identify and fix bugs in a program</p> <p>To design and create a maze-based challenge</p>
<p>Component knowledge</p>	<p>Learners develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. Learners compare digital and non-digital devices.</p> <p>Learners be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches.</p> <p>Learners discover the benefits of connecting devices in a network.</p>	<p>Learners use a range of techniques to create a stop-frame animation using tablets.</p> <p>Learners apply those skills to create a story-based animation.</p> <p>Learners add other types of media to their animation, such as music and text.</p>	<p>Learners become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. Learners use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents.</p> <p>Learners are introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover.</p>	<p>Learners develop their understanding of what a branching database is and how to create one.</p> <p>Learners use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects.</p> <p>Learners create physical and on-screen branching databases.</p> <p>Learners create an identification tool using a branching</p>	<p>Learners are introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. Learners make a representation of a piano.</p> <p>Learners apply stages of program design through this unit.</p>	<p>Learners consolidate prior learning relating to sequencing.</p> <p>Learners begin by moving a sprite in four directions (up, down, left, and right). Learners explore movement within the context of a maze, using design to choose an appropriately sized sprite.</p> <p>Learners are introduced to programming extensions, through the use of Pen blocks.</p> <p>Learners are given the opportunity to draw lines with sprites and change the size and colour of lines.</p>

			<p>Learners start to add text and images to create their own pieces of work using desktop publishing software.</p> <p>Learners look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.</p>	<p>database, which they will test by using it.</p> <p>Learners consider real-world applications for branching databases.</p>		<p>Learners design and code their own maze-tracing program.</p>
<p>National Curriculum KS1 (skills)</p>	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • use sequence, selection, and repetition in programs; work with variables and various forms of input and output. • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. • use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 					
<p>Vocabulary</p>	<p>Input, output, network, wireless, points, switches, connections, messages.</p>	<p>Animation, media, stop-frame, evaluate, design, sequence, predict, flip book.</p>	<p>Templates, orientation, placeholders, layout, edit, font, desktop publishing</p>	<p>Branching database, identification tool, applications.</p>	<p>Programming, motion, sound, event blocks, sequences, commands, code, algorithm.</p>	<p>Bugs, maze, sequencing, pen blocks, program</p>

<p>Links to prior knowledge</p>	<p>This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, and introducing the concept of computers connected together as a network.</p> <p>Following this unit, learners will explore the internet as a network of networks.</p>	<p>This unit progresses students' knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations.</p> <p>Following this unit, learners will further develop their video editing skills in Year 5.</p>	<p>This unit progresses learners' knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2.</p>	<p>This unit progresses learners' knowledge and understanding of the categories of data handling, with a particular focus on implementation.</p> <p>It builds on their knowledge of data and information from key stage 1.</p> <p>They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.</p>	<p>This unit learners will build on their prior experience of programming; the KS1 units cover floor robots and ScratchJr</p>	<p>This unit learners build on their prior experience of programming. The key stage 1 units focus on floor robots and ScratchJr,</p> <p>Year 3 unit 5 introduces the Scratch programming environment and the concept of sequences.</p>
<p>Cross Curricular Links</p>	<p>Maths Art</p>	<p>English History</p>		<p>Maths</p>		

Galliard Computing - Year 4

	<p>Term 1</p>	<p>Term 2</p>	<p>Term 3</p>
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Unit of work	Internet/Online Safety	Audio Editing/Online Safety	Photo Editing	Data Logging	Repetition in Shapes	Repetition in Games
Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Digital Literacy	Digital Literacy	Computer Science	Computer Science
Composite knowledge	<p>To describe how networks physically connect to other networks</p> <p>To recognise how networked devices make up the internet</p> <p>To outline how websites can be shared via the World Wide Web (WWW)</p> <p>To describe how content can be added and accessed on the World Wide Web</p> <p>To recognise how the content of the WWW is created by people</p> <p>To evaluate the consequences of unreliable content</p>	<p>To identify that sound can be recorded</p> <p>To explain that audio recordings can be edited</p> <p>To recognise the different parts of creating a podcast project</p> <p>To apply audio editing skills independently</p> <p>To combine audio to enhance my podcast project</p> <p>To evaluate the effective use of audio</p>	<p>To explain that the composition of digital images can be changed</p> <p>To explain that colours can be changed in digital images</p> <p>To explain how cloning can be used in photo editing</p> <p>To explain that images can be combined</p> <p>To combine images for a purpose</p> <p>To evaluate how changes can improve an image</p>	<p>To explain that data gathered over time can be used to answer questions</p> <p>To use a digital device to collect data automatically</p> <p>To explain that a data logger collects 'data points' from sensors over time</p> <p>To recognise how a computer can help us analyse data</p> <p>To identify the data needed to answer questions</p> <p>To use data from sensors to answer questions</p>	<p>To identify that accuracy in programming is important</p> <p>To create a program in a text-based language</p> <p>To explain what 'repeat' means</p> <p>To modify a count-controlled loop to produce a given outcome</p> <p>To decompose a task into small steps</p> <p>To create a program that uses count-controlled loops to produce a given outcome</p>	<p>To develop the use of count-controlled loops in a different programming environment</p> <p>To explain that in programming there are infinite loops and count-controlled loops</p> <p>To develop a design that includes two or more loops which run at the same time</p> <p>To modify an infinite loop in a given program</p> <p>To design a project that includes repetition</p> <p>To create a project that includes repetition</p>
Component knowledge	<p>Learners apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure.</p> <p>Learners learn that the World Wide Web is part</p>	<p>Learners identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally.</p> <p>Learners discuss the ownership of digital audio and the copyright</p>	<p>Learners develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused.</p> <p>Learners consider the impact that editing images can have, and evaluate the</p>	<p>Learners consider how and why data is collected over time. Learners consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to</p>	<p>Learners create programs by planning, modifying, and testing commands to create shapes and patterns.</p> <p>Learners use Logo, a text-based programming language.</p>	<p>Learners explore the concept of repetition in programming using the Scratch environment. Learners discover similarities between two environments.</p> <p>Learners look at the difference between count-controlled and</p>

	<p>of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create.</p> <p>Learners evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.</p>	<p>implications of duplicating the work of others.</p> <p>Learners use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files.</p> <p>Learners evaluate their work and give feedback to their peers.</p>	<p>effectiveness of their choices.</p>	<p>monitor the environment.</p> <p>Learners collect data as well as access data captured over long periods of time.</p> <p>Learners look at data points, data sets, and logging intervals.</p> <p>Learners spend time using a computer to review and analyse data.</p> <p>Learners pose questions and then use data loggers to automatically collect the data needed to answer those questions.</p>		<p>infinite loops, and use their knowledge to modify existing animations and games using repetition.</p> <p>Learners design and create a game which uses repetition, applying stages of programming design throughout.</p>
<p>National Curriculum KS1 (skills)</p>	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • use sequence, selection, and repetition in programs; work with variables and various forms of input and output. • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. • use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 					
<p>Vocabulary</p>	<p>World Wide Web (WWW), content, network, secure</p>	<p>Input, output, audio, tracks, podcast, copyright</p>	<p>Composition, digital images, cloning</p>	<p>Data loggers, sensors, data points,</p>	<p>Accuracy, count controlled loop, repeat, text-based language</p>	<p>Count controlled loops, infinite loops, repetition, programming</p>

Links to prior knowledge	This unit progresses students' knowledge and understanding of networks in Year 3.	This unit progresses students' knowledge and understanding of creating media, by focusing on the recording and editing of sound to produce a podcast. Following this unit, learners will explore combining audio with video in the 'Video editing' unit in Year 5.	This unit progresses students' knowledge and understanding of digital photography and using digital devices to create media. Following this unit, learners will further develop their image editing skills in Year 5 – Vector drawing.	This unit progresses learners' knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units. The unit also introduces the idea of automatic data collection. Learners are also introduced to data in tables and graphs, knowledge they will build on in the Year 5 unit (flat file databases) and the Year 6 unit (spreadsheets).	This unit progresses students' knowledge and understanding of programming. It progresses from the sequence of commands in a program to using count-controlled loops. Pupils will create algorithms and then implement those algorithms as code.	This unit builds on learners prior experience of programming. The KS1 units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units.
Cross Curricular Links	PSHE	Science English				

Galliard Computing - Year 5

	Term 1		Term 2		Term 3	
Unit of work	Sharing Information	Vector Drawing	Video Editing	Flat-File Databases	Selection in Physical Computing	Selection in Quizzes

Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Digital Literacy	Digital Literacy	Computer Science	Computer Science
Composite knowledge	<p>To explain that computers can be connected together to form systems</p> <p>To recognise the role of computer systems in our lives</p> <p>To identify how to use a search engine</p> <p>To describe how search engines select results</p> <p>To explain how search results are ranked</p> <p>To recognise why the order of results is important, and to whom</p>	<p>To identify that drawing tools can be used to produce different outcomes</p> <p>To create a vector drawing by combining shapes</p> <p>To use tools to achieve a desired effect</p> <p>To recognise that vector drawings consist of layers</p> <p>To group objects to make them easier to work with</p> <p>To apply what I have learned about vector drawings</p>	<p>To explain what makes a video effective</p> <p>To use a digital device to record video</p> <p>To capture video using a range of techniques</p> <p>To create a storyboard</p> <p>To identify that video can be improved through reshooting and editing</p> <p>To consider the impact of the choices made when making and sharing a video</p>	<p>To use a form to record information</p> <p>To compare paper and computer-based databases</p> <p>To outline how you can answer questions by grouping and then sorting data</p> <p>To explain that tools can be used to select specific data</p> <p>To explain that computer programs can be used to compare data visually</p> <p>To use a real-world database to answer questions</p>	<p>To control a simple circuit connected to a computer</p> <p>To write a program that includes count-controlled loops</p> <p>To explain that a loop can stop when a condition is met</p> <p>To explain that a loop can be used to repeatedly check whether a condition has been met</p> <p>To design a physical project that includes selection</p> <p>To create a program that controls a physical computing project</p>	<p>To explain how selection is used in computer programs</p> <p>To relate that a conditional statement connects a condition to an outcome</p> <p>To explain how selection directs the flow of a program</p> <p>To design a program that uses selection</p> <p>To create a program that uses selection</p> <p>To evaluate my program</p>
Component knowledge	<p>Learners develop their understanding of computer systems and how information is transferred between systems and devices.</p> <p>Learners consider small-scale systems as well as large-scale systems.</p> <p>Learners explain the input, output, and</p>	<p>Learners start to create vector drawings.</p> <p>Learners learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.</p>	<p>Learners learn how to create short videos by working in pairs or groups.</p> <p>Learners are exposed to topic-based language and develop the skills of capturing, editing, and manipulating video.</p> <p>Learners reflect on and assess their progress in creating a video.</p>	<p>Learners look at how a flat-file database can be used to organise data in records.</p> <p>Learners use tools within a database to order and answer questions about data.</p> <p>Learners create graphs and charts from their data to help solve problems.</p>	<p>Learners use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment.</p> <p>Learners are introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output</p>	<p>Learners develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if... then... else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'.</p>

	<p>process aspects of a variety of different real-world systems.</p> <p>Learners discover how information is found on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines.</p>	<p>Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.</p>		<p>Learners use a real-life database to answer a question, and present their work.</p>	<p>devices — LEDs and motors).</p> <p>Learners are introduced to conditions as a means of controlling the flow of actions in a program.</p> <p>Learners make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the ‘if...then...’ structure) and write algorithms and programs that utilise this concept.</p> <p>Learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and its components are connected, and how selection can be used to control the operation of the model.</p> <p>Learners apply the stages of programming design.</p>	<p>Learners represent understanding in algorithms, and then by constructing programs in the Scratch programming environment.</p> <p>Learners learn how to write programs that ask questions and use selection to control the outcomes based on the answers given.</p> <p>Learners use this knowledge to design a quiz in response to a given task and implement it as a program.</p> <p>Learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.</p>
<p>National Curriculum KS1 (skills)</p>	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 					

	<ul style="list-style-type: none"> • use sequence, selection, and repetition in programs; work with variables and various forms of input and output. • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. • use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 					
Vocabulary	Search engines, computer systems, WWW	Vector drawings, resize, rotate, duplicate, layers,	Video, technique, editing, reshooting, manipulating,	Flat – file database, grouping, charts, graphs, data,	circuit count-controlled loops condition	computer programs, conditional statement, selection, implement
Links to prior knowledge	This unit progresses learners' knowledge and understanding of computing systems.	<p>This unit progresses learners' knowledge and understanding of digital painting and has some links to the Year 3 - Desktop publishing' unit, in which learners used digital images.</p> <p>In this Year 5 unit, learners create images that could be used in desktop publishing documents.</p>	<p>This unit progresses learners' knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video.</p> <p>The unit builds on the Year 4 unit 'Photo editing' where composition is introduced and the Year 3 unit 'Stop-frame animation' where learners explored some of the features of video production.</p> <p>By the end of this unit, learners will have developed the skills required to plan, record, edit, and share a video.</p>	<p>This unit progresses learners' knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data.</p> <p>It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems.</p>	<p>This unit builds on learners' prior experience of programming using a block-based language (e.g. Scratch) and understand the concepts of sequence and repetition.</p> <p>Key stage 1 units focus on floor robots and ScratchJr.</p>	<p>This unit builds on learners' prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'.</p>
Cross Curricular Links					Science D&T	

Galliard Computing - Year 6

	Term 1		Term 2		Term 3	
Unit of work	Internet Communication/Online Safety	3D Modelling	Webpage Creation/Online Safety	Introduction to Spreadsheets	Variables in Games	Sensing
Link to Programme of study	Computers, Networks & the WWW	Digital Literacy	Digital Literacy	Digital Literacy	Computer Science	Computer Science
Composite knowledge	<p>To explain the importance of internet addresses</p> <p>To recognise how data is transferred across the internet</p> <p>To explain how sharing information online can help people to work together</p> <p>To evaluate different ways of working together online</p> <p>To recognise how we communicate using technology</p> <p>To evaluate different methods of online communication</p>	<p>To recognise that you can work in three dimensions on a computer</p> <p>To identify that digital 3D objects can be modified</p> <p>To recognise that objects can be combined in a 3D model</p> <p>To create a 3D model for a given purpose</p> <p>To plan my own 3D model</p> <p>To create my own digital 3D model</p>	<p>To review an existing website and consider its structure</p> <p>To plan the features of a web page</p> <p>To consider the ownership and use of images (copyright)</p> <p>To recognise the need to preview pages</p> <p>To outline the need for a navigation path</p> <p>To recognise the implications of linking to content owned by other people</p>	<p>To create a data set in a spreadsheet</p> <p>To build a data set in a spreadsheet</p> <p>To explain that formulas can be used to produce calculated data</p> <p>To apply formulas to data</p> <p>To create a spreadsheet to plan an event</p> <p>To choose suitable ways to present data</p>	<p>To define a 'variable' as something that is changeable</p> <p>To explain why a variable is used in a program</p> <p>To choose how to improve a game by using variables</p> <p>To design a project that builds on a given example</p> <p>To use my design to create a project</p> <p>To evaluate my project</p>	<p>To create a program to run on a controllable device</p> <p>To explain that selection can control the flow of a program</p> <p>To update a variable with a user input</p> <p>To use a conditional statement to compare a variable to a value</p> <p>To design a project that uses inputs and outputs on a controllable device</p> <p>To develop a program to use inputs and outputs on a controllable device</p>

<p>Component knowledge</p>	<p>Learners explore how data is transferred over the internet.</p> <p>Learners initially focus on addressing, before they move on to the makeup and structure of data packets.</p> <p>Learners look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication.</p> <p>Learners learn how to communicate responsibly by considering what should and should not be shared on the internet.</p>	<p>Learners develop their knowledge and understanding of using a computer to produce 3D models.</p> <p>Learners familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects.</p> <p>Learners create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy.</p> <p>Learners examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.</p>	<p>Learners are introduced to creating websites for a chosen purpose.</p> <p>Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites.</p> <p>Learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.</p>	<p>Learners are taught the importance of formatting data to support calculations, while also being introduced to formulas.</p> <p>Learners begin to understand how they can be used to produce calculated data.</p> <p>Learners are taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them.</p> <p>Learners use spreadsheets to plan an event and answer questions.</p> <p>Learners create charts, and evaluate their results in comparison to questions asked</p>	<p>Learners find out what variables are and relate them to real-world examples of values that can be set and changed.</p> <p>Learners use variables to create a simulation of a scoreboard.</p> <p>Learners experiment with variables in an existing project, then modify them, before they create their own project.</p> <p>Learners design their own project.</p> <p>Learners apply their knowledge of variables and design to improve their games in Scratch.</p>	<p>Learners build in a simple program and test within the new programming environment.</p> <p>Learners transfer it to their micro:bit.</p> <p>Learners create code from a given design. In</p> <p>Learners create their own design, using the same template.</p> <p>Learners apply their knowledge of the programming constructs and use their design to create their own micro:bit-based step counter.</p>
<p>National Curriculum KS1 (skills)</p>	<p>Key stage 2</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. use sequence, selection, and repetition in programs; work with variables and various forms of input and output. use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 					

Vocabulary	Internet addresses, public, private, communication.	3D model, 3D space, digital image, modify	HTML Code, ownership, copyright, navigation path	Spreadsheet, data, cell, formulas	Variables, simulation, scoreboard	controllable device, variable, conditional statement
Links to prior knowledge	This unit progresses learners' knowledge and understanding of computing systems and online collaborative working.	This unit progresses students' knowledge and understanding of creating 3D graphics using a computer.	This unit progresses students' knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing.	This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets. Specifically, learners will have experienced data in tables and charts in the Y4 data logging and Y5 branching database units.	This unit builds on learners' prior experience of programming in Scratch. These constructs are covered in the Year 3, 4, and 5 in the programming units respectively. Each year group includes at least one unit that focuses on Scratch.	This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming.
Cross Curricular Links		Maths Art D&T	English	Maths		